[DOCUMENT NAME] DRAWINGS

[FIG. 1]

OBJECT

1 SIGNAL GENERATION SECTION

7 SIGNAL PROCESSING SECTION

10 PROJECTION SECTION

11 IMAGE PICK-UP SECTION

S1 ILLUMINATION LIGHT MODULATION SIGNAL

S2 IMAGE PICK-UP GAIN MODULATION SIGNAL

S3 CONTROL SIGNAL

S5 THREE-DIMENSIONAL INFORMATION SIGNAL

S6 ILLUMINATION LIGHT

S7 REFLECTED LIGHT

S41, S42 VIDEO SIGNAL

[FIG. 8]

LIGHT-EMITTING ELEMENT

S1 ILLUMINATION LIGHT MODULATION SIGNAL

S6 ILLUMINATION LIGHT

10A PROJECTION SECTION

30 ILLUMINATION OPTICAL SYSTEM

[FIG. 9]

10B PROJECTION SECTION

S1 ILLUMINATION LIGHT MODULATION SIGNAL

S3 LIGHT-EMITTING ELEMENT

S6 ILLUMINATION LIGHT

30 ILLUMINATION OPTICAL SYSTEM

33 LIGHT-EMITTING ELEMENT

34 FIXED LIGHT

[FIG. 10]

4 LENS

5 IMAGE INTENSIFIER WITH GATING OPERATION

6 IMAGE PICK-UP ELEMENT

11 IMAGE PICK-UP SECTION

20 OPTICAL IMAGE TRANSFER OPTICAL SYSTEM

21 GATE

22 IMAGE SPLIT CIRCUIT

S2 IMAGE PICK-UP GAIN MODULATION SIGNAL

S3 CONTROL SIGNAL

S7 LIGHT REFLECTED FROM OBJECT

S41 VIDEO SIGNAL

S42 VIDEO SIGNAL

[FIG. 11]

7 SIGNAL PROCESSING SECTION

41 SYNCHRONOUS SEPARATION CIRCUIT

42 IMAGE PICK-UP LEVEL STORAGE CIRCUIT 1

43 IMAGE PICK-UP LEVEL STORAGE CIRCUIT 2

44 COMPUTATION CIRCUIT

45 STORAGE CIRCUIT

46 SYNCHRONOUS SIGNAL ADDITION CIRCUIT

S3 CONTROL SIGNAL

S5 THREE-DIMENSIONAL INFORMATION SIGNAL

S41 AND S42 VIDEO SIGNAL

S47 SYNCHRONOUS PHASE CONTROL CIRCUIT

[FIG. 12]

PULSE LASER

HALF-MIRROR

REFLECTED PULSE

OBJECT

STOP

START

TIME-COUNT CIRCUIT

TIME DURING WHICH LASER BEAM TRAVELS

START

STOP

TIME DURING WHICH THE LASER BEAM TRAVELS BACK AND FORTH, DISTANCE

LASER (CONTINUOUS WAVE)

AMPLITUDE MODULATION

REFLECTED LIGHT

OBJECT

OSCILLATION CIRCUIT

PHASE-DIFFERENCE DETECTION CIRCUIT

TIME DURING WHICH LASER BEAM TRAVELS

TRANSMITTED LASER BEAM

RECEIVED LASER BEAM

PHASE DIFFERENCE (AFTER THE LASER BEAM HAS TRAVELED BACK AND FORTH), DISTANCE

[FIG. 13]

PULSE LASER BEAM

COLLIMATOR

BEAM SCANNER

TARGET

COLLIMATOR

PHOTO-MULTIPLEXER

CONSTANT-RATIO THRESHOLD VALUE CIRCUIT

STOP

TIME-TO-PULSE-HEIGHT CONVERTER

START

AVERAGING CIRCUIT

AD CONVERTER INTERFACE

BEAM SCANNER INTERFACE

COMPUTER

TARGET

9 MHz OSCILLATOR

15 mW HeNe LASER

OPTICAL MODULATOR

BEAM SPLITTER

SCANNER MOTOR

PHOTO-MULTIPLEXER

9 MHz FILTER

NETWORK ANALYZER

AMPLITUDE

PHASE

computer

[FIG. 14]

9 TV CAMERA

41 SINUSOIDAL WAVEFORM OSCILLATOR

42A PHASE CONTROL

42B PHASE CONTROL

43A AMPLIFICATION

43B AMPLIFICATION

44 DC POWER

45 SUPERIMPOSING RF SIGNAL ONTO VIDEO SIGNAL

46 WAVEFORM SHAPING

47 FREQUENCY-DIVISION AND DELAY

48 SETTING OF GATE WIDTH

[DESCRIPTION OF THE REFERENCE NUMERALS]

1 OBJECT

2 LASER BEAM

3 IMAGE INTENSIFIER TUBE

31 PHOTO-ELECTRIC SURFACE

32 FIBER OPTICAL PLATE

33 LIGHT RECEIVING SURFACE

41 SINUSOIDAL WAVE GENERATION CIRCUIT

42 PHASE CONTROL CIRCUIT

43 AMPLIFIER

44 DC POWER CIRCUIT

45 RF SIGNAL SUPERIMPOSING CIRCUIT

46 WAVEFORM SHAPING CIRCUIT

47 FREQUENCY-DIVISION AND DELAY CIRCUIT

48 GATE WIDTH SETTING CIRCUIT

49 MCP GATE DRIVE CIRCUIT

FIG. 1

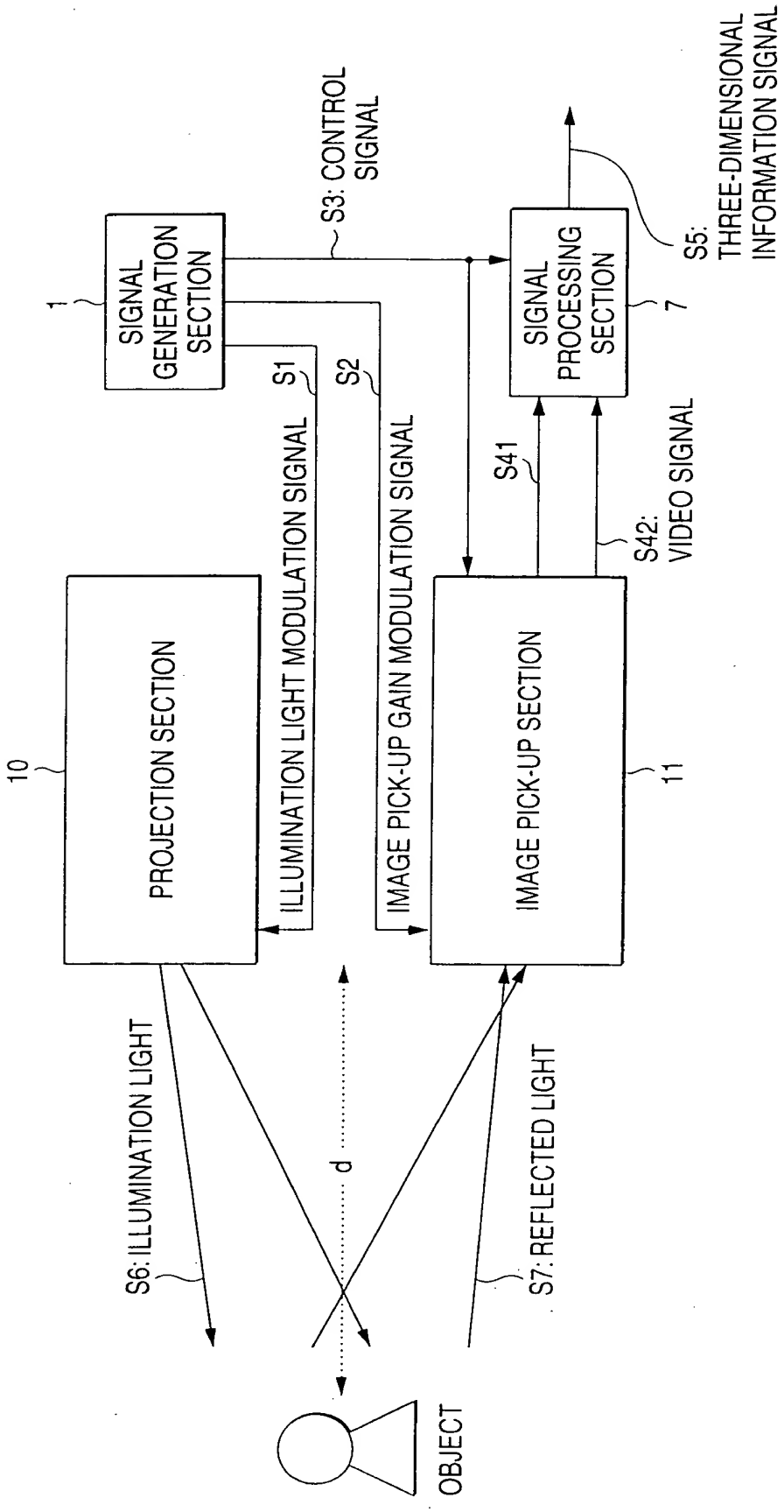

SIGNAL GENERATION SECTION
1
S3: CONTROL SIGNAL
SIGNAL PROCESSING SECTION
7
S5: THREE-DIMENSIONAL INFORMATION SIGNAL
S1
S2
S41
S42: VIDEO SIGNAL
ILLUMINATION LIGHT MODULATION SIGNAL
IMAGE PICK-UP GAIN MODULATION SIGNAL
PROJECTION SECTION
10
IMAGE PICK-UP SECTION
11
S6: ILLUMINATION LIGHT
S7: REFLECTED LIGHT
d
OBJECT

FIG. 2 (a)

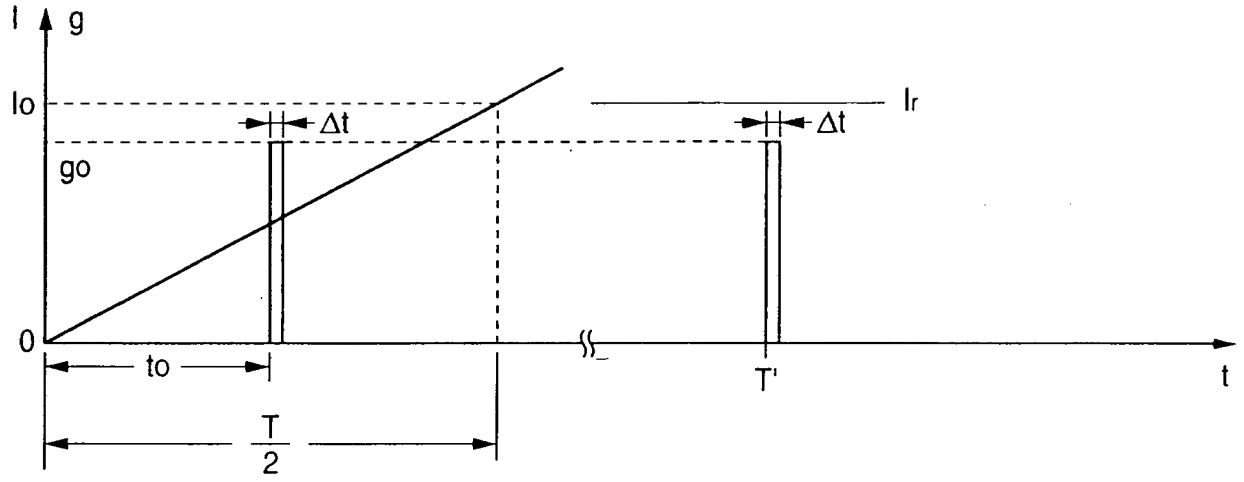


FIG. 2 (b)

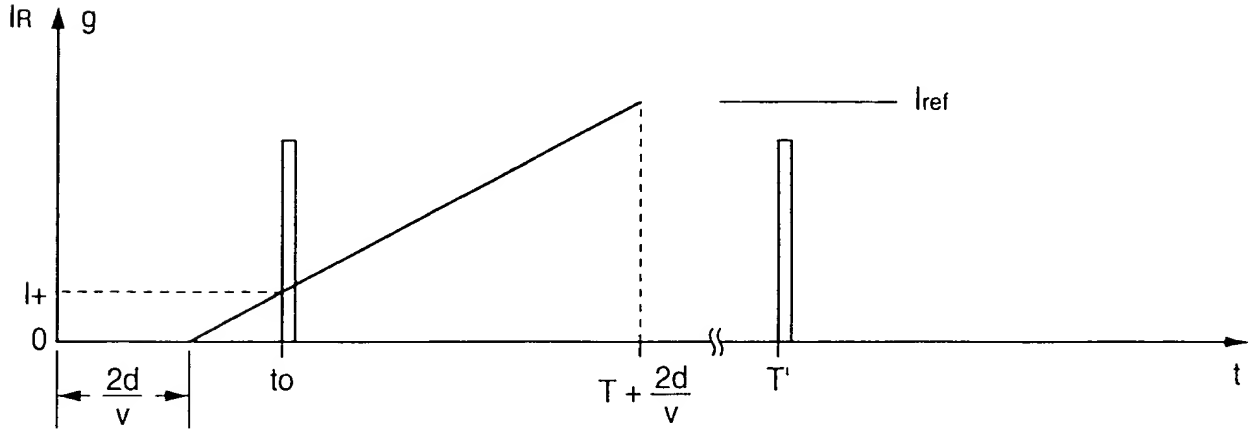


FIG. 3 (a)

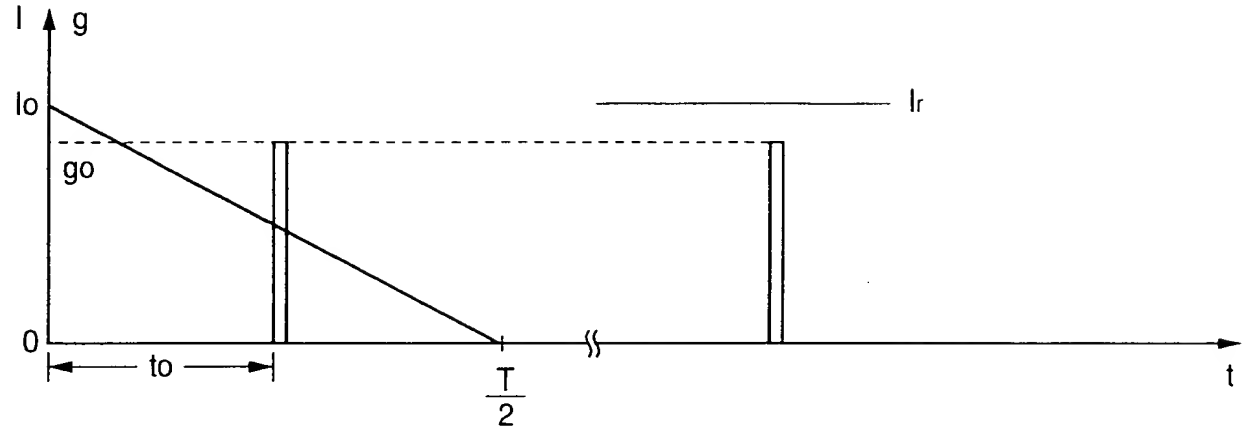


FIG. 3 (b)

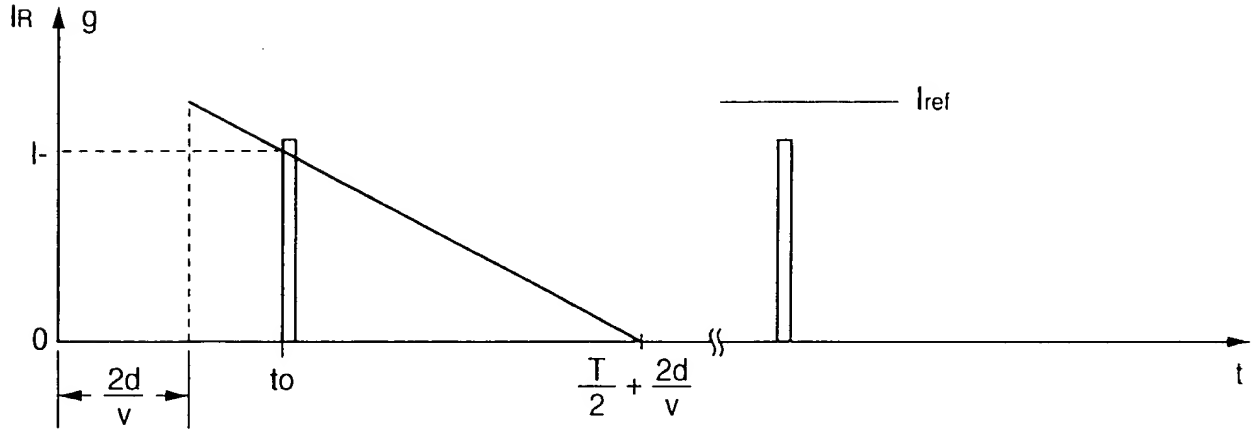


FIG. 4 (a)

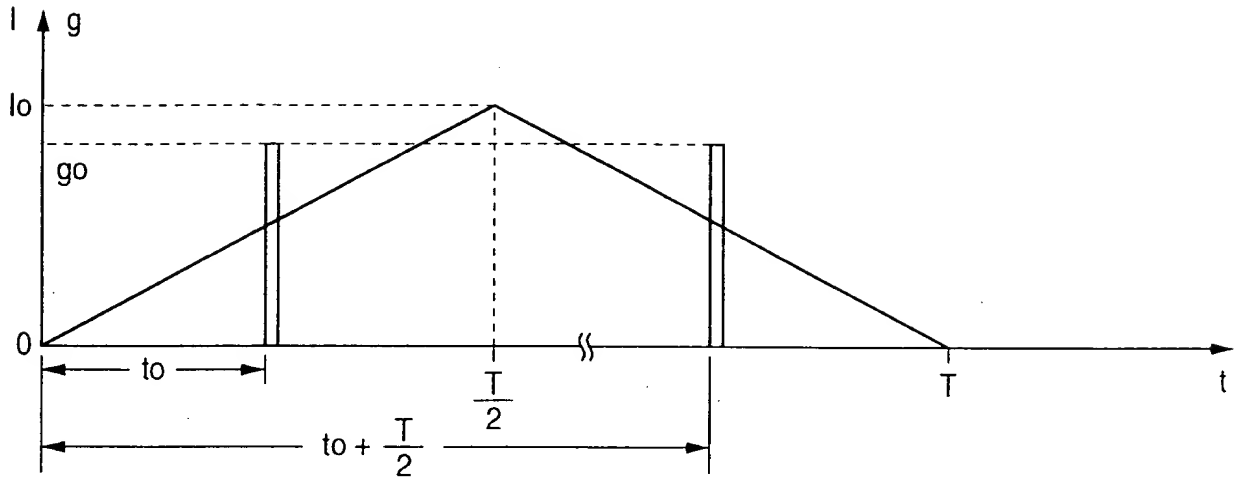


FIG. 4 (b)

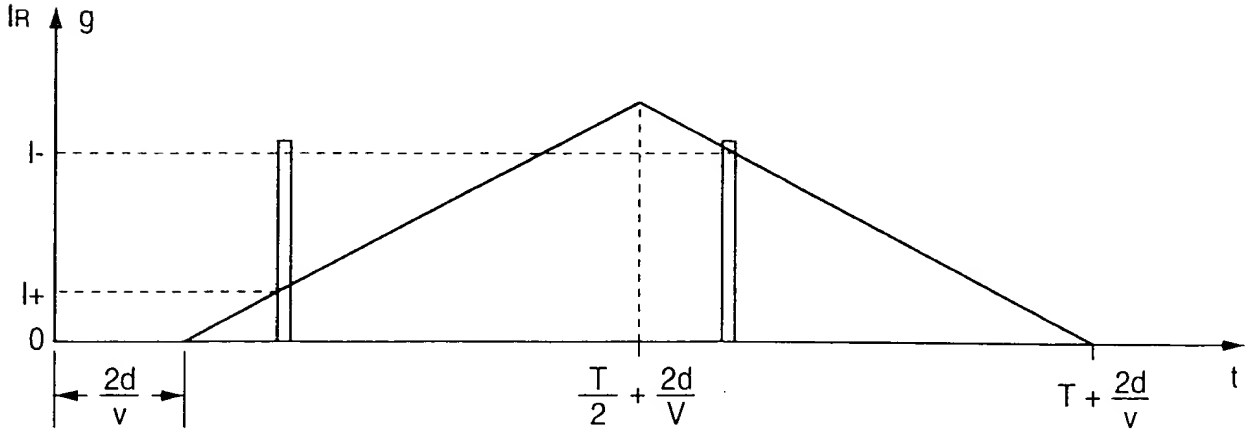


FIG. 5 (a)

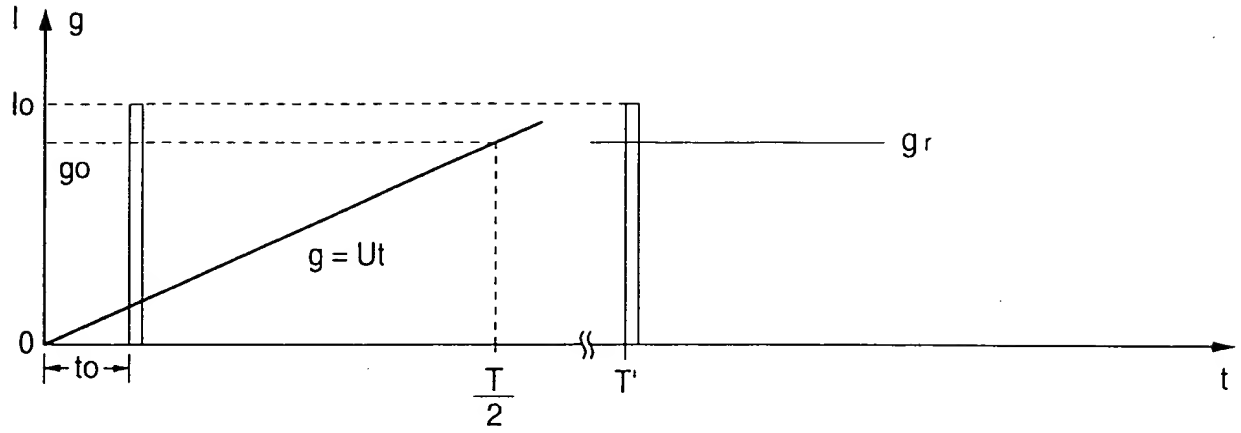


FIG. 5 (b)

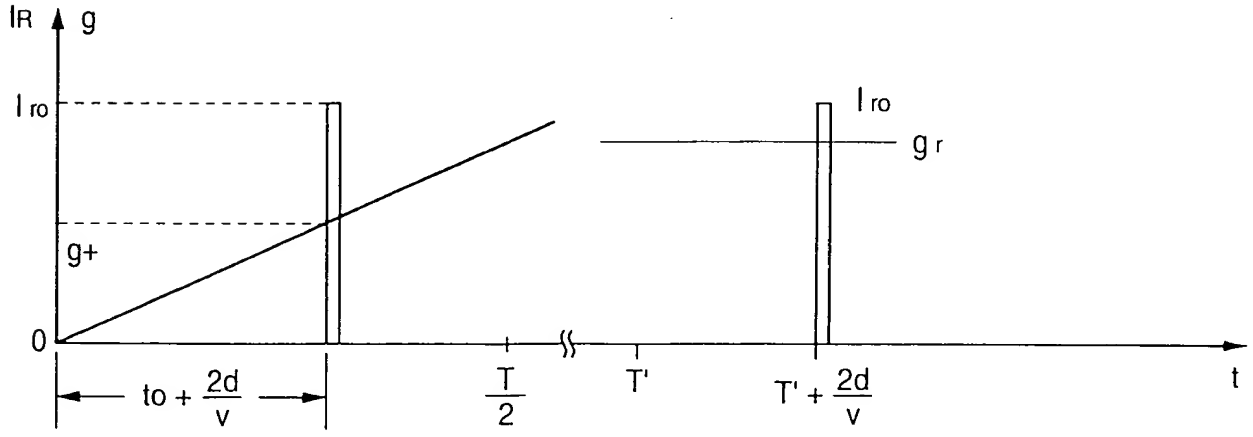


FIG. 6 (a)

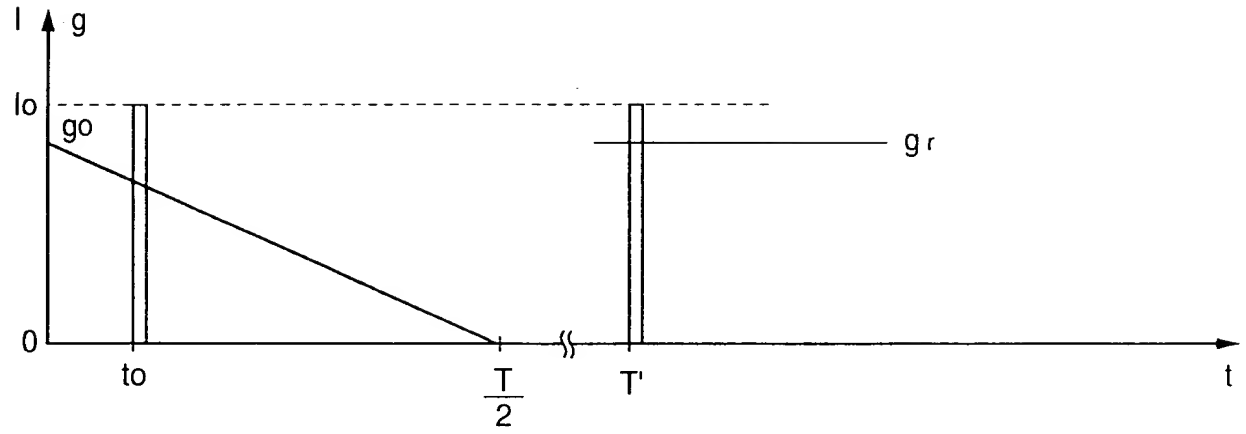


FIG. 6 (b)

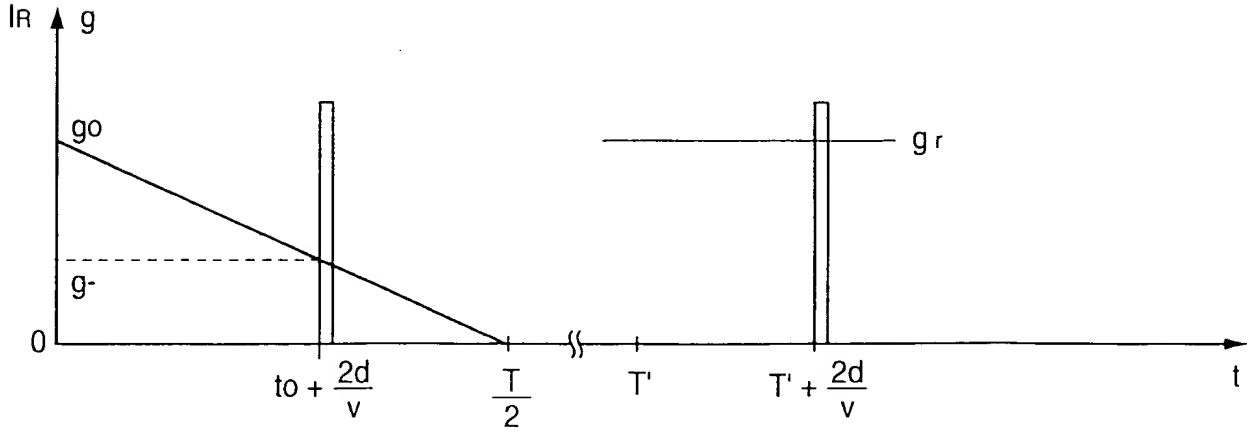


FIG. 7 (a)

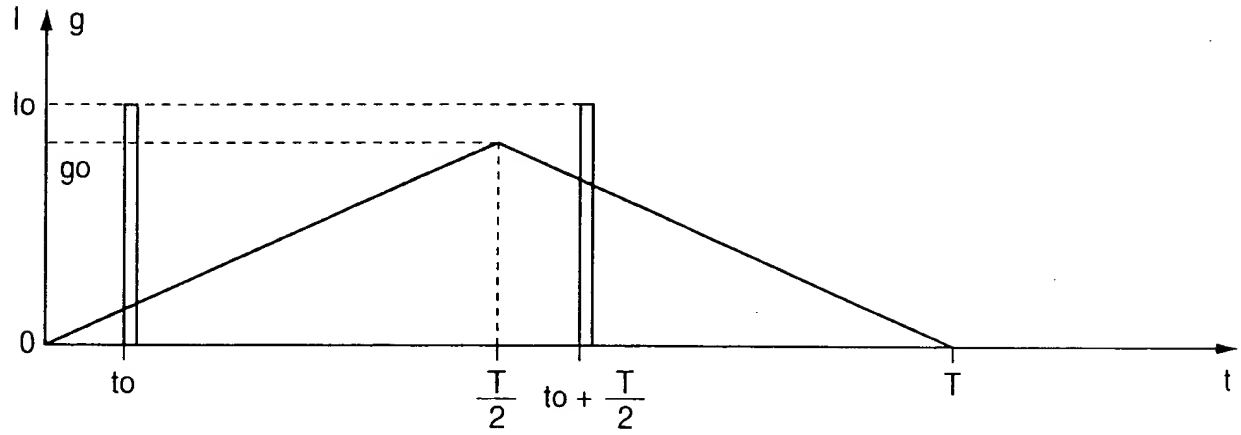


FIG. 7 (b)

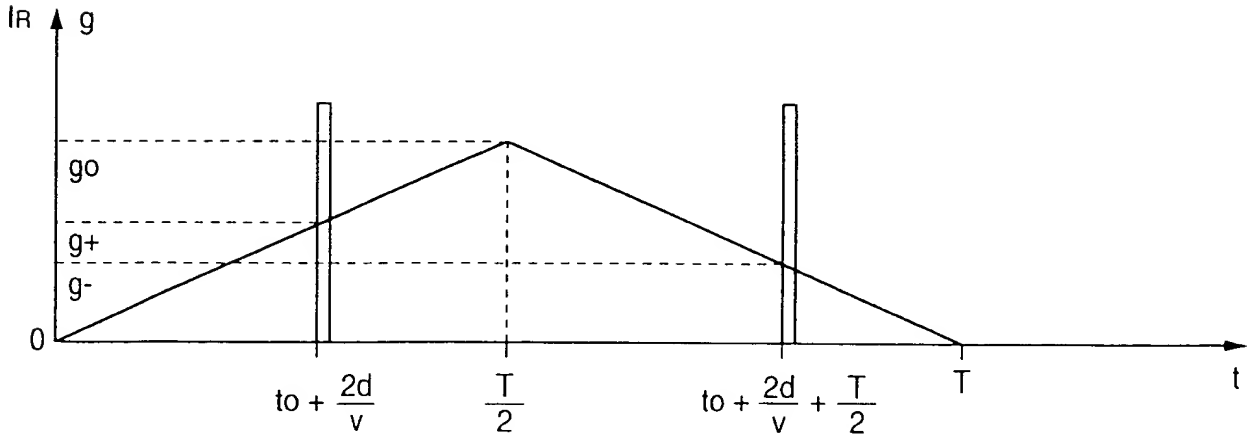


FIG. 8

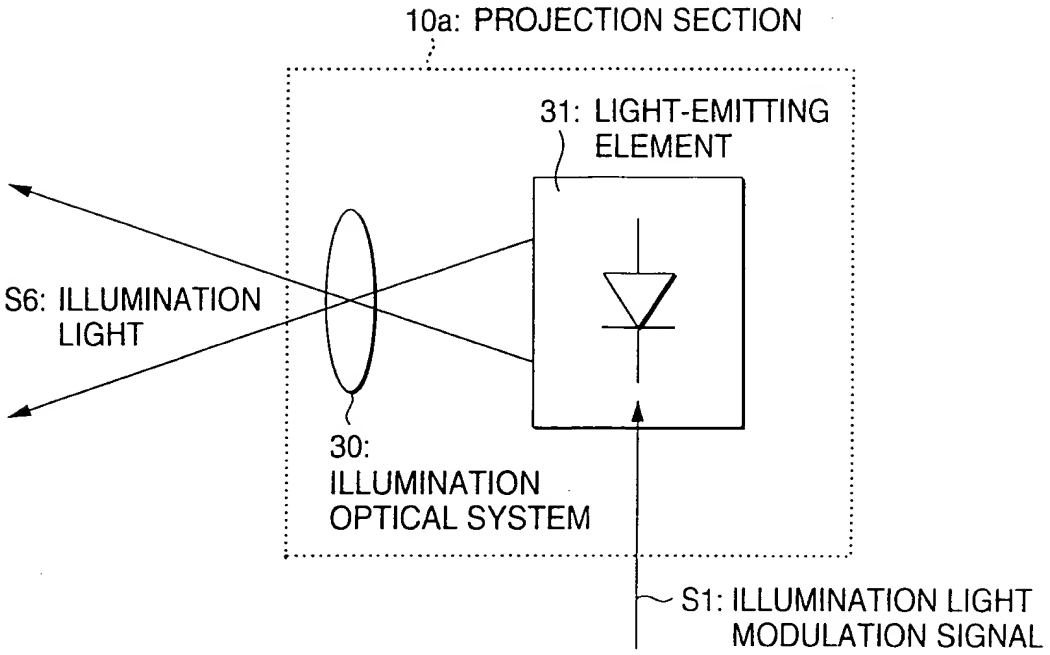

10a: PROJECTION SECTION
31: LIGHT-EMITTING ELEMENT
S6: ILLUMINATION LIGHT
30: ILLUMINATION OPTICAL SYSTEM
S1: ILLUMINATION LIGHT MODULATION SIGNAL

FIG. 9

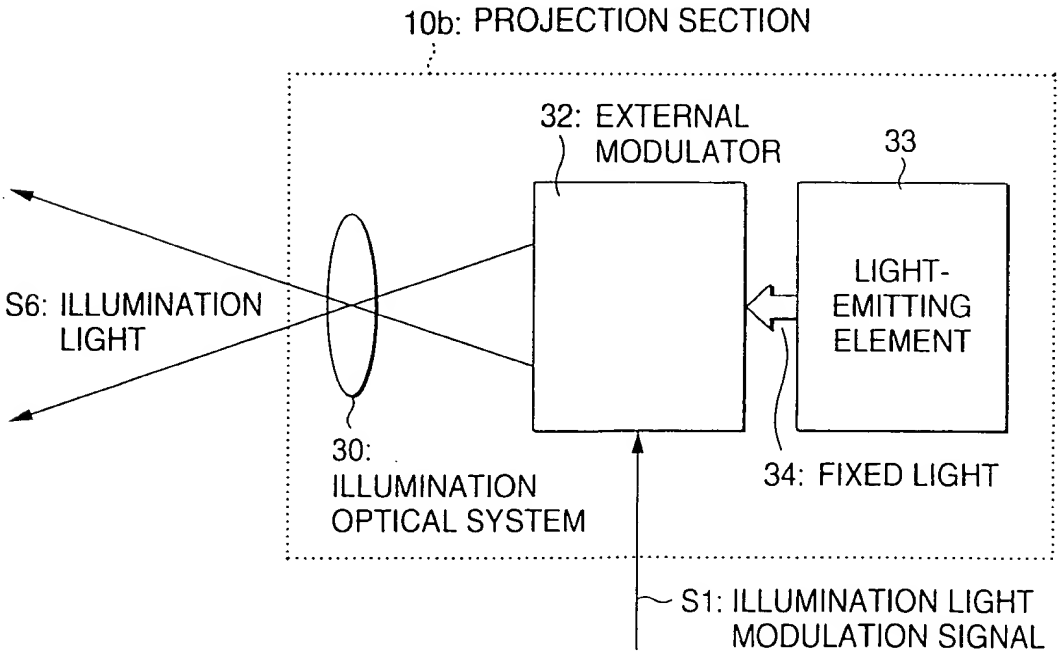

10b: PROJECTION SECTION
32: EXTERNAL MODULATOR
33
LIGHT-EMITTING ELEMENT
S6: ILLUMINATION LIGHT
30: ILLUMINATION OPTICAL SYSTEM
34: FIXED LIGHT
S1: ILLUMINATION LIGHT MODULATION SIGNAL

FIG. 10

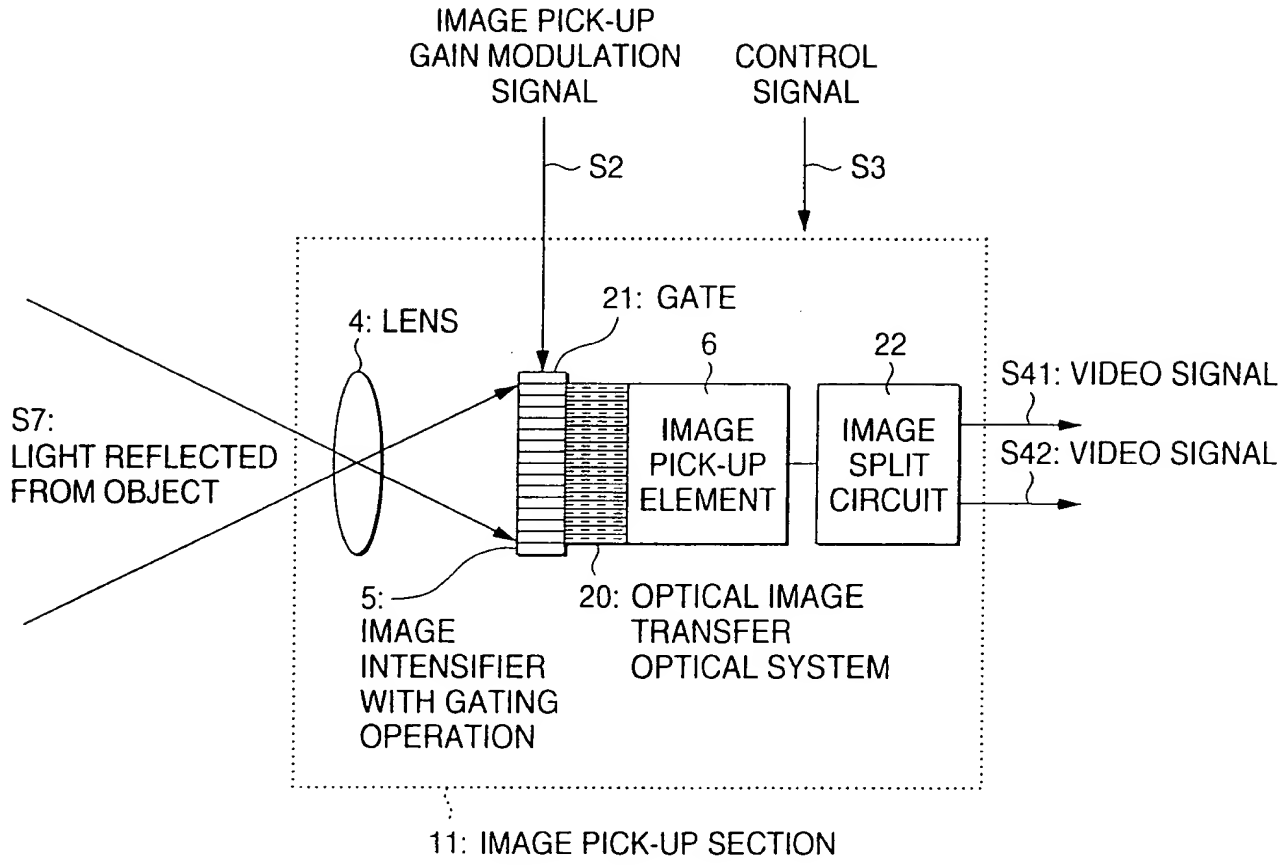


IMAGE PICK-UP GAIN MODULATION SIGNAL
CONTROL SIGNAL
S2
S3
4: LENS
21: GATE
6
22
S41: VIDEO SIGNAL
S42: VIDEO SIGNAL
S7: LIGHT REFLECTED FROM OBJECT
IMAGE PICK-UP ELEMENT
IMAGE SPLIT CIRCUIT
5: IMAGE INTENSIFIER WITH GATING OPERATION
20: OPTICAL IMAGE TRANSFER OPTICAL SYSTEM
11: IMAGE PICK-UP SECTION

FIG. 11

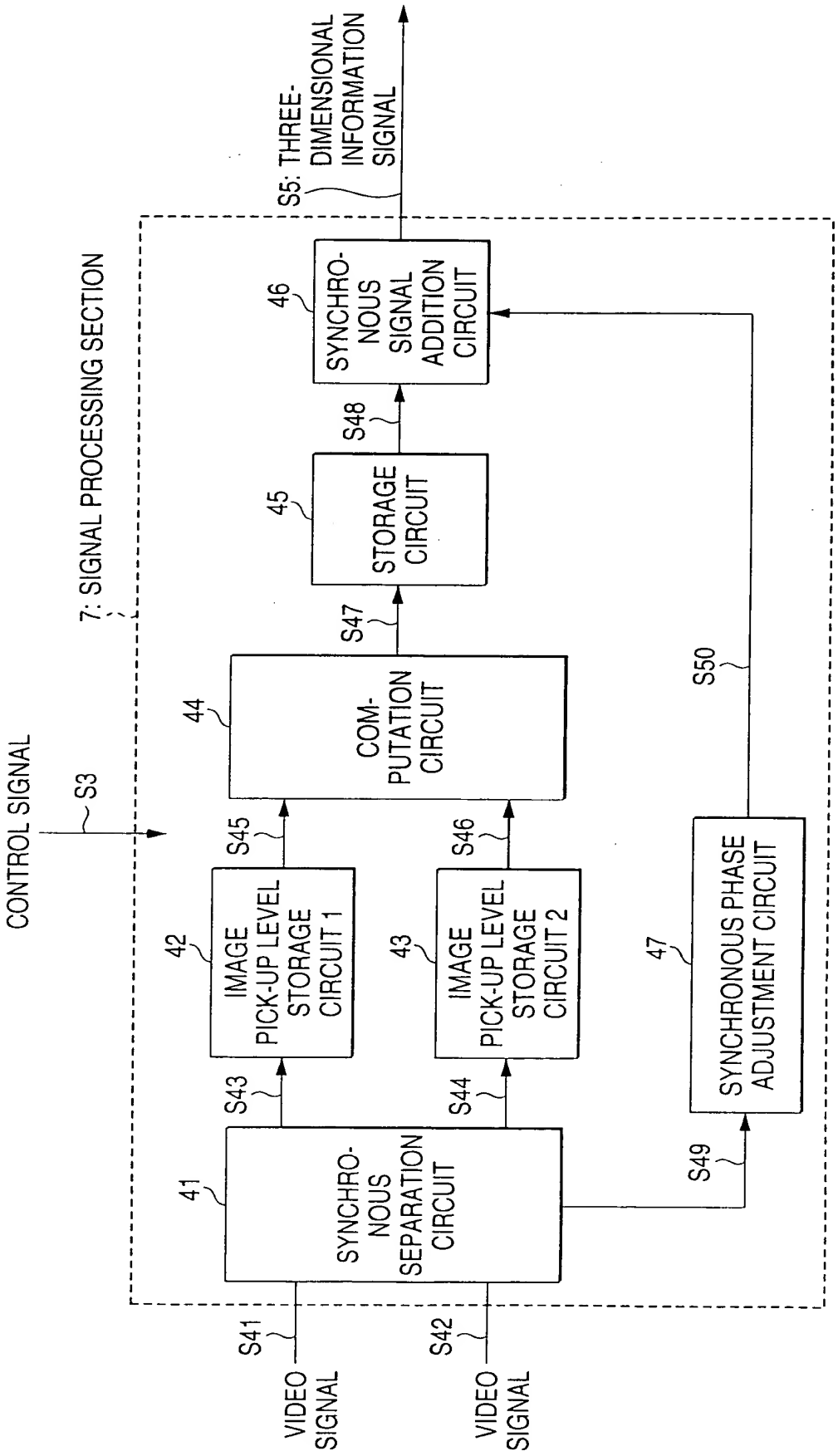
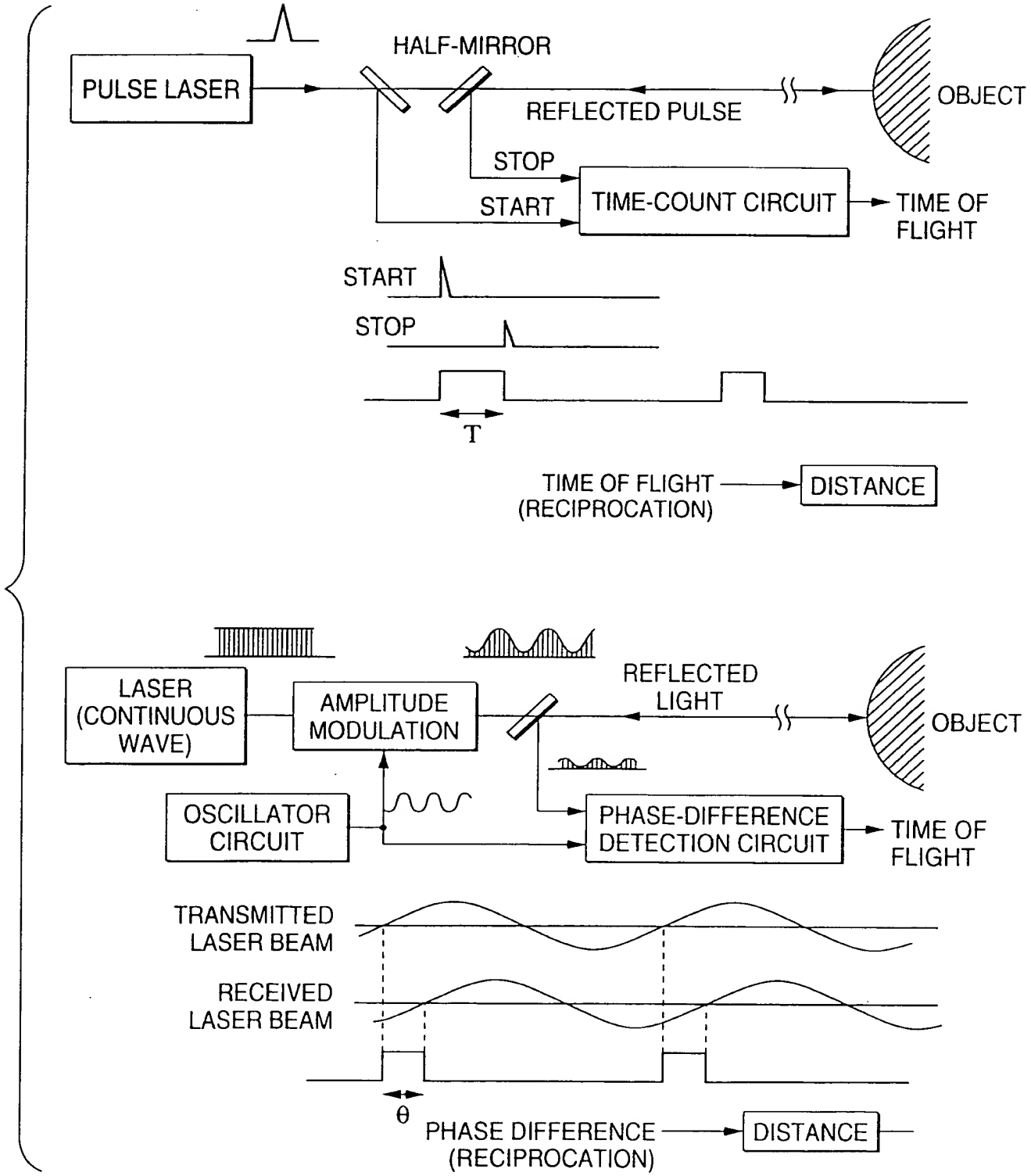

7: SIGNAL PROCESSING SECTION
CONTROL SIGNAL
S3
S41
VIDEO SIGNAL
S42
VIDEO SIGNAL
41
SYNCHRONOUS SEPARATION CIRCUIT
42
IMAGE PICK-UP LEVEL STORAGE CIRCUIT 1
43
IMAGE PICK-UP LEVEL STORAGE CIRCUIT 2
44
COM-PUTATION CIRCUIT
45
STORAGE CIRCUIT
46
SYNCHRONOUS SIGNAL ADDITION CIRCUIT
47
SYNCHRONOUS PHASE ADJUSTMENT CIRCUIT
S43
S44
S45
S46
S47
S48
S49
S50
S5: THREE-DIMENSIONAL INFORMATION SIGNAL

FIG. 12


PULSE LASER
HALF-MIRROR
REFLECTED PULSE
OBJECT
STOP
START
TIME-COUNT CIRCUIT
TIME OF FLIGHT
START
STOP
T
TIME OF FLIGHT (RECIPROCATION)
DISTANCE
LASER (CONTINUOUS WAVE)
AMPLITUDE MODULATION
REFLECTED LIGHT
OBJECT
OSCILLATOR CIRCUIT
PHASE-DIFFERENCE DETECTION CIRCUIT
TIME OF FLIGHT
TRANSMITTED LASER BEAM
RECEIVED LASER BEAM
θ
PHASE DIFFERENCE (RECIPROCATION)
DISTANCE

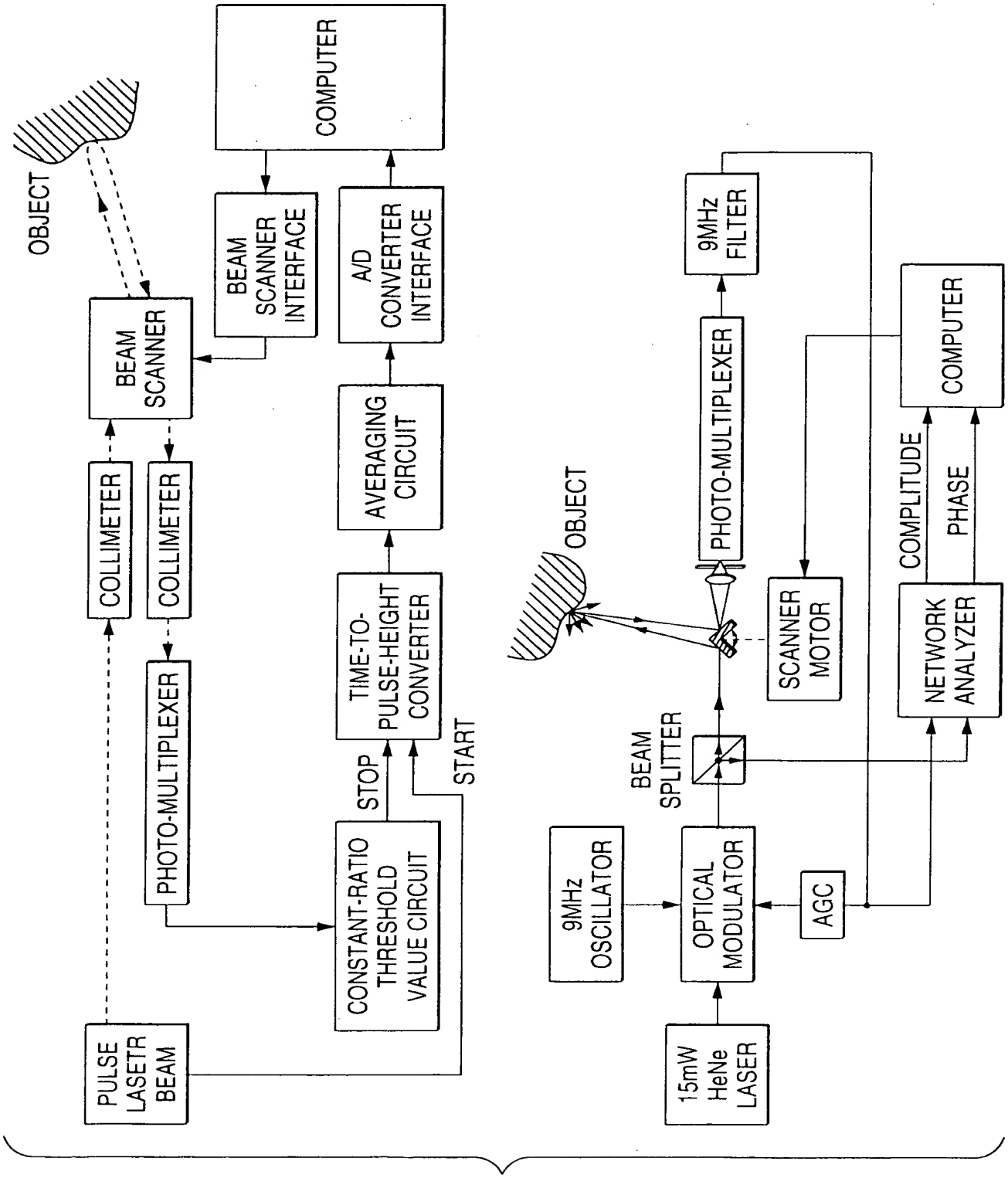
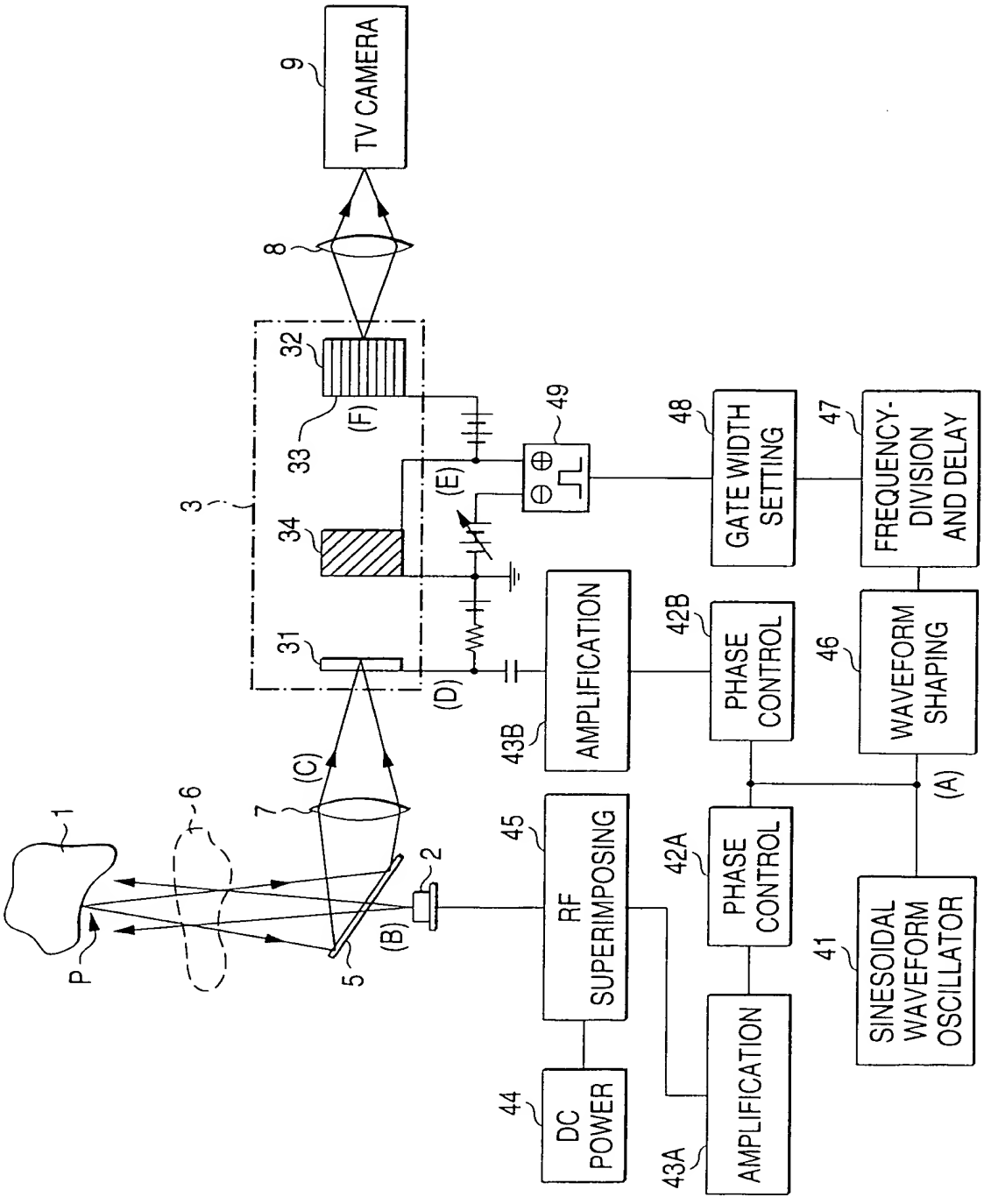

OBJECT
BEAM SCANNER
COLLIMETER
COLLIMETER
PHOTO-MULTIPLEXER
PULSE LASETR BEAM
CONSTANT-RATIO THRESHOLD VALUE CIRCUIT
STOP
START
TIME-TO-PULSE-HEIGHT CONVERTER
AVERAGING CIRCUIT
BEAM SCANNER INTERFACE
A/D CONVERTER INTERFACE
COMPUTER
OBJECT
9MHz OSCILLATOR
OPTICAL MODULATOR
15mW HeNe LASER
BEAM SPLITTER
AGC
SCANNER MOTOR
PHOTO-MULTIPLEXER
9MHz FILTER
NETWORK ANALYZER
COMPLITUDE
PHASE
COMPUTER

FIG. 13

FIG. 14


TV CAMERA
9
8
32
33
(F)
3
34
31
(C)
(D)
(E)
49
48
47
GATE WIDTH SETTING
FREQUENCY-DIVISION AND DELAY
42B
PHASE CONTROL
46
WAVEFORM SHAPING
43B
AMPLIFICATION
45
RF SUPERIMPOSING
42A
PHASE CONTROL
(A)
41
SINESOIDAL WAVEFORM OSCILLATOR
44
DC POWER
43A
AMPLIFICATION
1
6
7
2
(B)
5
P